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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/978,603	10/15/2001	Frank Kuo	AB-1170 US	5098

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EXAMINER

MANDALA, VICTOR A

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 08/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/978,603

Applicant(s)

KUO ET AL.

Examiner

Victor A Mandala Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi U.S. Patent No. 6,081,029 in view of Li et al. U.S. Patent No. 6,348,729.

Referring to claim 1, a die pad, (Yamaguchi Figure 9a #13), of a lead frame, (Yamaguchi Figure 14a #46), the die pad, (Yamaguchi Figure 9a #13), for receiving a die, (Yamaguchi Figure 9a #15), the die pad, (Yamaguchi Figure 9a #13), comprising: a plurality of slots, (Yamaguchi Figure 9a #30c), penetrating the die pad, (Yamaguchi Figure 9a #13), and having a restrictive region, (Yamaguchi Figure 9a #15), defined by the slots, (Yamaguchi Figure 9a #30c), whereby a solder paste, (Yamaguchi Col. 11 Lines 60-61), the die is attached to the die pad with an adhesive & Li et al. Figure 3 & Col. 5 Lines 1-4 teaches that the die can be attached to the die pad with solder paste & See ** below), for connecting the die, (Yamaguchi Figure 9a #15), with the die pad, (Yamaguchi Figure 9a #13), is restricted within the restrictive region, (Yamaguchi Figure 9a #15).

** Yamaguchi teaches all of the claimed matter except for the adhesive material used to attach the die with the die pad being made of a solder paste, but Li et al. teaches a die attached to a die pad with a solder paste. It would be obvious to one skilled in the art to attach the die with

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the die pad with a solder paste material due to the higher thermal coupling properties a solder paste has. It is well known that solder paste contains conductive metals in its composition, which transfers heat more effectively than nonconductive adhesive materials.

Referring to claim 2, the die pad, (Yamaguchi Figure 9a #13), wherein the area of the restrictive region, (Yamaguchi Figure 9a #15), is equal to the area of the die, (Yamaguchi Figure 9a #15).

Referring to claim 3, the die pad, (Yamaguchi Figure 9a #13), wherein the slots, (Yamaguchi Figure 10 #30d), are located at least one side of the restrictive region, (Yamaguchi Figure 9a #15).

Referring to claim 4, the die pad, (Yamaguchi Figure 9a #13), where the slots, (Yamaguchi Figure 9a #30c), are located at least one corner of the restrictive region, (Yamaguchi Figure 9a #15).

Referring to claim 5, a lead frame, (Yamaguchi Figure 14a #46), comprising: a plurality of die pads, (Yamaguchi Figure 9a #13), and a plurality of pins, (Yamaguchi Figure 14a #12), wherein the die pad, (Yamaguchi Figure 9a #13), is used for receiving a die, (Yamaguchi Figure 9a #15), characterized in that each die pad, (Yamaguchi Figure 9a #13), comprises: a plurality of slots, (Yamaguchi Figure 9a #30c), whereby a solder paste, (Yamaguchi Col. 11 Lines 60-61, the die is attached to the die pad with an adhesive & Li et al. Figure 3 & Col. 5 Lines 1-4 teaches that the die can be attached to the die pad with solder paste & See ** below), for connecting the die, (Yamaguchi Figure 9a #15), with the die pad, (Yamaguchi Figure 9a #13), is restricted within the restrictive region, (Yamaguchi Figure 9a #15).

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** Yamaguchi teaches all of the claimed matter except for the adhesive material used to attach the die with the die pad being made of a solder paste, but Li et al. teaches a die attached to a die pad with a solder paste. It would be obvious to one skilled in the art to attach the die with the die pad with a solder paste material due to the higher thermal coupling properties a solder paste has. It is well known that solder paste contains conductive metals in its composition, which transfers heat more effectively than nonconductive adhesive materials.

*** Yamaguchi discloses the claimed invention except for a plurality of die pads. It would be obvious to one having ordinary skill in the art at the time the invention was made to have a plurality of die pads, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.* 193 USPQ8 Yamaguchi teaches all of the claimed matter except for the plurality of die pads on a lead frame, but Li et al. teaches a plurality of die pads on a lead frame in Figure 4. It would be obvious to anyone skilled in the art to design an array of chips on a single lead frame because it would have been an obvious design choice.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor A Mandala Jr. whose telephone number is (703) 308-6560. The examiner can normally be reached on Monday through Thursday from 8am till 6pm..


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (703) 308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

VAMJ

August 22, 2002


NATHAN J. FLYNN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800